

**REMARKS**

Claims 1 – 45 are pending in the application. Claims 1, 8, 15, 34, 35, 44, 45 are currently amended. Claims 6 and 36-43 are canceled herein. New claim 46 has been added.

**Claim Rejections – 35 USC § 103**

The Examiner rejects claims 1-7, 15-17, 20-28, 31-35, 44 and 45 under 35 U.S.C. 103(b) as being unpatentable over Sato et al. U.S. Patent No. 6,388,667 (hereinafter: *Sato*) in view of Gagin at al U.S. Patent No. 5,630,757 (hereinafter: *Gagin*). In the light of the Examiner's remarks, in order to emphasize the inventiveness of the present claims in the light of the prior art, Applicant has amended independent claims 1, 15, 34, 44, and 45. Accordingly, Applicant believes that *Sato* in view of *Gagin* does not render obvious the amended independent Claims 1, 15, 35, 44, and 45. Claims 8 and 34 were also amended

Amended Claim 1 now defines:

*"A server adapted to communicate with a remote client, said server comprising:*

*a scene;*

*a plurality of object oriented programming (OOP) encapsulated virtual objects for use in an object-oriented environment; each said virtual object integrally having*

*at least a user-sensible aspect and further comprising at least a functional aspect; said user-sensible aspect being encapsulated as a user-sensible encapsulation, separately from said functional aspect, said virtual object being split by locating respective user-sensible and functional encapsulations of the same virtual object at said remote client and said server respectively, each said encapsulated virtual object comprises a definition of at least one relationship with another said encapsulated virtual object and said scene."*

As disclosed in claim 1, *the encapsulated virtual objects* are hosted in an *object-oriented environment*. Each encapsulated virtual object is divided to *at least a user-sensible aspect and at least a functional aspect*. Known object-oriented environments, such as the object-oriented environment of *Sato*, comprise virtual objects, which are stored, each as a whole, in a common location. In the USPTO Office Action dated November 30, 2006 (hereinafter: "the office action"), the Examiner is of the opinion that the subject matter of independent claim 1 does not involve an inventive step as being obvious over *Sato* in view of *Gagin*. Examiner submits that *Sato* does not teach locating respective user-sensible and functional encapsulations of the same virtual object at different terminals. However, the Examiner is of the opinion that in the light of *Sato* and *Gagin* it would have been obvious to the one having ordinary skill in the art, at the time the invention was made, to modify *Sato* with the teaching of *Gagin* to split up the user-sensible and functional components with the motivation to provide faster interaction between terminals, see the first paragraph in page 3 of the Office Action mailed November 30, 2006. The Examiner bases his opinion on the teachings of *Gagin* found at Column 4, lines 20- 30. Applicant strongly urges that the Examiner erred in asserting that it would have been obvious to the one having ordinary skill in the art, at the time the invention was made, to modify *Sato* with the teaching of *Gagin* to split up the user-sensible and functional components of the virtual object of the present invention.

Applicant submits that *Sato* discloses an environment that comprises a plurality of virtual objects. However, *Sato* does not disclose the splitting of each object into a functional aspect and a user sensible aspect. Indeed, as argued by the Examiner, each actor in *Sato*, which may be considered as an object, can be used to store functional and user sensible aspects, see Fig. 3 of *Sato*. However each of these aspects is stored in a separate object. The splitting between functional and user sensible aspects of the same object is not mentioned, either explicitly or implicitly in *Sato*.

In addition, the splitting between functional and user sensible aspects is not mentioned in *Gagin*. Applicant submits that *Gagin* discloses storing graphical information on the user site, see column 4, line 22 of *Gagin*. In such a system, only status information about the game is transmitted between the sites. However, *Gagin* does not

disclose, mention, or imply virtual objects or an environment that comprises a plurality of virtual objects.

Therefore, it is clear that as with *Sato*, Gagin does not disclose, mention, or imply the splitting of each object to functional and user sensible aspects. Thus, Applicant believes that teaching the skilled in the art that graphical information is stored on the user site and that only status information about the game is transmitted between sites does not teach or suggest the limitation of claim 1 that the *virtual object is split by locating respective user-sensible and functional encapsulations of the same virtual object at a remote client and a server respectively.*

In the response to arguments section of the office action, the Examiner is of the opinion that the combination of *Sato-Gagin* teaches the Applicant's invention as *Gagin* splits the graphics aspect of the object and the functional objects to reduce the amount of bandwidth that is consumed by the user.

As described above, the claimed invention discloses an OOP virtual object integrally having functional and sensible parts included therein. The integral parts of the claimed invention are designed to be stored in different locations without changing the independent nature of the OOP virtual object. Applicant believes that the independent nature of the the OOP virtual object may be clarified in the light of the term "object" in Wikipedia (en.wikipedia.org/wiki/Object\_%28computer\_science%29) that defines an object as follows:

*"an individual unit of run-time data storage that is used as the basic building block of programs. These objects act on each other, as opposed to a traditional view in which a program may be seen as a collection of functions, or simply as a list of instructions to the computer. Each object is capable of receiving messages, processing data, and sending messages to other objects. Each object can be viewed as an independent little machine or actor with a distinct role or responsibility."*

It is submitted that the skilled person would have access to this source and that this source is indicative of the common general knowledge in the field.

In the light of the above, Applicant asserts that as *Gagin teaches storing graphical information* on the user site and *Sato* teaches virtual objects, the combination thereof only teaches storing virtual objects on the user site and status information on the

server side. The combination thereof clearly does not teach an independent OOP virtual object, capable of receiving messages, processing data, and sending messages to other objects, having two integral parts that are designed to be stored in different locations without changing the independent representation and functioning of the containing OOP virtual object.

Thus, the combination of *Sato-Gagin* does not teach the splitting of an OOP virtual object to user-sensible and functional encapsulations in a manner that allows the storing thereof in different computers, as described in the present invention.

Therefore, it is clear that neither *Sato* nor *Gagin* nor the combination thereof disclose, mention, or imply the splitting of each OOP object to functional and user sensible aspects.

Moreover, as described above, the encapsulated virtual object of claim 1 *comprises a definition of at least one relationship with another said encapsulated virtual object and said scene*.

With regard to claim 6, the Examiner is of the opinion that *Sato* teaches a virtual object that is at least partly defined by a relationship with a second object. The Examiner bases his opinion on the teachings of *Sato* found in relation to Fig. 2 and element 24, 32, and 34 thereof. The referred figure and elements are related to actor-to-actor communication, such as the ability to allow one actor to transmit a message to another actor, see lines 43-50 in column 17. In the present invention, on the other hand relationships are explicitly defined as a way of allowing a trigger applied to a first object to cause changes or actions to be applied to other objects, see lines 1-5 in page 34 of the present invention. Therefore, Applicant strongly believes that *Sato* does not disclose an object that *comprises a definition of at least one relationship with another said encapsulated virtual object and said scene* but only an object that is designed for allowing actor-to-actor communications.

Therefore, it is clear that neither *Sato* nor *Gagin* nor the combination thereof disclose or imply a *virtual object that is split by locating respective user-sensible and functional encapsulations of the same virtual object at a remote client and a server respectively* and *comprises a definition of at least one relationship with another said encapsulated virtual object and said scene*.

It should be noted that in order to establish a *prima facie* case of obviousness, the prior art references when combined must teach or suggest all the limitations of independent claim 1 (*In re Vaack*, 947 F.2d 488, 20 USPQ2d 1438 (Fed. Cir. 1991)). The Examiner's references, as elaborated above, do not teach or suggest the virtual object of the claimed invention. Therefore, no *prima facie* case of obviousness is established regarding the claim 1 limitations.

Moreover, it should be noted that for establishing a *prima facie* case of obviousness there must be some suggestion or motivation, either in the references themselves or in the knowledge generally available to one of ordinary skill in the art, to modify the reference or to combine reference teachings. *Sato* relates to an information processing apparatus and method for presenting a 3D virtual space wherein the user is capable of operating its avatar to communicate with other avatars, see the field of invention of *Sato*. *Gagin* relates to communications services delivered via cable television infrastructure, see the field of invention of *Gagin*. As described above, claim 1 discloses *splitting the virtual object by locating respective user-sensible and functional encapsulations of the same virtual object at a remote client and a server respectively*. *Sato*, who describes an apparatus and method for presenting a 3D virtual space wherein the user is capable of operating its avatar to communicate with other avatars, does not address or recognize the splitting limitation. Moreover, *Gagin*, who describes communications services delivered via cable television infrastructure, does not teach virtual objects and therefore the splitting issue as disclosed in the limitation of claim 1 above simply does not arise. Therefore, it is clear that there is no suggestion or motivation to modify *Sato*, who does not refer to the aforementioned splitting limitation, by adding the teachings of *Gagin*, who does not mention or suggest virtual objects. Thus, Applicant strongly believes that there is no suggestion or motivation to make the present invention's system and method, from the cited references.

It is thus respectfully submitted that independent claim 1 is allowable for all of the above reasons. The arguments made above in respect of the non-obviousness of claim 1 apply *mutatis mutandis* to independent amended claims 15, 35, 44 and 45. Furthermore, it is believed that the dependent claims 2-7, 16-17, 20-28, 31-33 are allowable as being dependent on allowable main claim.

The Examiner further rejects claims 8-12, 13, 14, 18, 19, 29, 30 and 34 under U.S.C. 103(a) as being unpatentable over *Sato* in view of Matsuda U.S. Patent No. 6,734,885 (hereinafter: "*Matsuda*"). In the light of the Examiner's remarks, in order to emphasize the inventiveness of the present claims in the light of the prior art, Applicant has amended independent claims 8 and 34. Accordingly, Applicant believes that *Sato* in view of *Matsuda* does not render obvious the amended independent claims 8 and 34 and related dependent claims 9-12, 13, 14, 18, 19, 29, 30 and 34.

Amended claim 8 now defines:

*"A server adapted to communicate with a remote client, said server comprising: a plurality of virtual objects within a virtual computing environment, each said virtual object having a relationship with another said virtual object, said relationship being such that an interaction with each said virtual object is operable to bring about a consequential interaction with at least another said second object, said virtual computing environment comprising a method for restricting the number of consequential interactions of said first virtual object with at least said second virtual object when the number of interacting objects involved in said consequential interactions reaches a predefined maximum, thereby avoiding undesirable loops"*

As disclosed in claim 8, the server comprises an object-oriented environment having a plurality of virtual objects that comprises a method for restricting the number of consequential interactions of a virtual object with one or more other virtual objects. The method for restricting the number of consequential interactions of the virtual object of the claimed invention is designed to prevent the forming of undesirable loops, see lines 10-20 in page 40 of the present invention.

In particular, the method for restricting the number of consequential interactions is designed to solve an inherent problem with allowing selected objects to have relationships with other objects in their vicinity, in that interacting with an object may result in consequential further reactions; that is, in uncontrollable or undesirable consequences and knock on effects since the other objects themselves

have relationships with further objects, see page 39, lines 18-25 of the present invention.

In the USPTO Office Action dated November 30, 2006, the Examiner is of the opinion that the subject matter of independent claim 8 does not involve an inventive step as being obvious over *Sato* in view of *Matsuda*. Examiner submits that *Sato* does not teach a virtual computing environment comprising a method for restricting the number of consequential interactions of a virtual object. However, the Examiner is of the opinion that in the light of *Sato* and *Matsuda* it would have been obvious to the one having ordinary skill in the art, at the time the invention was made, to modify *Sato* with the teaching of *Matsuda* to put a limit on the number of consequential interactions between objects with the motivation to maintain the speed and usability of the virtual world, see the first paragraph in page 15 of the Office Action mailed November 30, 2006.

The Examiner bases his opinion on the teachings of *Matsuda* found at Column 2, lines 28-31.

Applicant strongly urges that it would not have been obvious to modify *Sato* with the teaching of *Matsuda* to put a limit on the number of consequential interaction of the *virtual object* in order to prevent the forming of undesirable loops, as disclosed in Amended Claim 8.

It should be noted that the Examiner is of the opinion that by limiting the number of users that interact, *Matsuda* limits the number of interacting objects and that less users will equate with less interacting objects, see the response to arguments section of the office action. Applicant submits that *Matsuda* teaches that it is necessary to impose such an upper limit on the number of users allowed to participate in the 3-dimensional virtual space in order to limit the amount of system processing and communication on a transmission line, as explained by the Examiner.

However, *Matsuda* does not disclose, imply or even suggest a *method for restricting the number of consequential interactions* of the *virtual object*, thereby preventing *undesirable loops*. Limiting the number of users, as suggested by *Matsuda*, does not limit the number of interactions between allowed users. Therefore, limiting the number of users does not prevent *undesirable loops of consequential interactions*. *Matsuda* is designed for allowing clients to experience a 3-dimensional virtual space

without increasing the amount of system processing and communication on the transmission line, see lines 44-50 in column 2, of Matsuda and not for preventing undesirable loops.

There is no hint in either *Sato* or *Matsuda* or the combination thereof of the aforementioned method for restricting the number of consequential interactions of the *virtual object* in order to prevent the forming of undesirable loops. It should be noted that in order to establish a *prima facie* case of obviousness, the prior art references when combined must teach or suggest all the limitations of independent claim 8 (*In re Vaeck*, 947 F.2d 488, 20 USPQ2d 1438 (Fed. Cir. 1991)). The Examiner's references, as elaborated above, do not teach or suggest the aforementioned method for restricting the number of consequential interactions of the claimed invention. Therefore, no *prima facie* case of obviousness is established regarding the claim 8 limitations.

Moreover, as described above, *Matsuda* discloses a solution for avoiding a substantial increase in the amount of processing of the system and communication on a transmission line. Therefore, it is clear that a skilled person using a state of the art server and encountering the aforementioned inherent problem of *undesirable loops* therein would not be led to look at *Matsuda* since it does not provide a solution for such a problem. The skilled person would have to solve these problems independently, which he is not able to do.

Based thereupon, Applicant cannot find, in *Sato* or in *Matsuda*, reasoning or a convincing line as to why the artisan would have found claim 8 to be obvious. Therefore, Applicant believes there is no basis for the conclusion that claim 8 is directed to obvious subject matter, *see Ex parte Clapp*, 227 USPQ 972, 973 (Bd. Pat. App. & Inter. 1985).

Moreover, as neither *Sato* nor *Matsuda* describes the aforementioned inherent problem of *undesirable loops*, Applicant believes that there is no motivation to combine them in order to suggest the claimed invention solution thereto.

It is thus respectfully submitted that independent claim 8 is allowable for all of the above reasons. The arguments made above in respect of the non-obviousness of claim 8 apply *mutatis mutandis* to independent amended claim 34. Furthermore, it is believed that the dependent claims 9-14 are allowable as being dependent on allowable main claim.

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All of the matters raised by the Examiner have been dealt with and are believed to have been overcome. In view of the foregoing, it is respectfully submitted that all the claims now pending in the application are allowable. An early Notice of Allowance is therefore respectfully requested.

Respectfully submitted,



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Encl.:

Request for Continued Examination (RCE)

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